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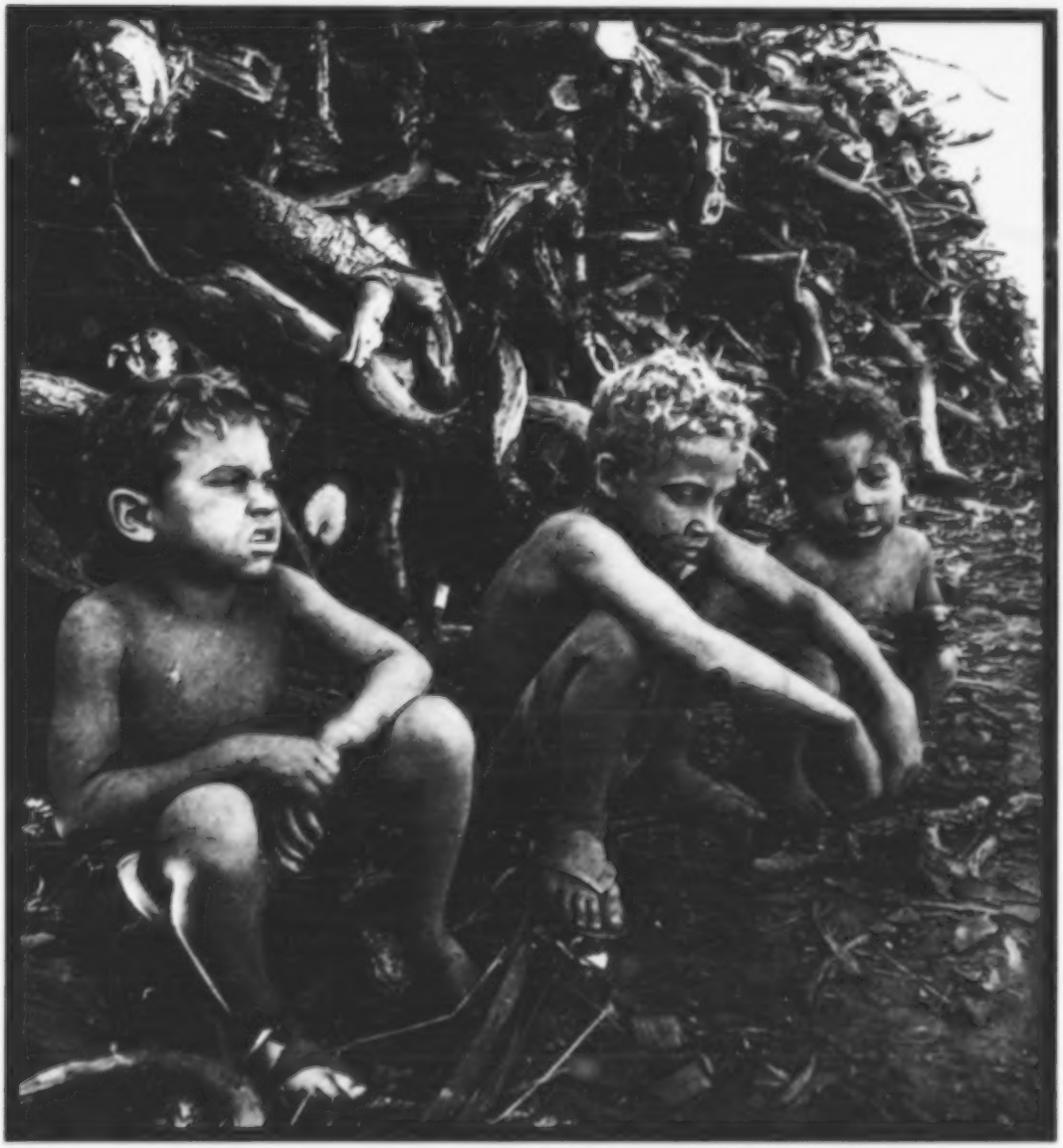

POVERTY AND THE ENVIRONMENT: BREAKING THE VICIOUS CIRCLE

UNEP

Elizabeth Dowdeswell

Stand with your back to the water, in an increasing number of countries, and you will see the impact of poverty on the environment.

In the foreground is a city whose most basic services have broken down. Raw sewage is being pumped into the bay. Garbage collection is non-existent, and the carriers of infectious diseases are scurrying from one garbage pile to another. Lift your eyes and you will see denuded hillsides, cleared by people so desperate for fuelwood that they have destroyed the forests that hold the soil. If it is raining, you will see a river of mud—once rich topsoil—being washed through the town and into the sea.

Turn around to face the sea or on a road and you will see the effect of this destruction: boats or vehicles with cargoes of refugees preparing for a journey to anywhere that will take them.

This picture, of people driven by poverty to destroy their own means of sustenance, is repeated in many countries. Around the world, more than one billion people live in poverty, and a part of being poor means destroying today what could have sustained you tomorrow. Not by choice, but as a necessity for immediate survival.

In Somalia farmers are eating their seed grain. In the Sahel women are walking 15 kilometres for a bundle of fuelwood. In West Asia, over-irrigated land is becoming salinized. In Latin America and throughout the humid tropics, genetically rich forests are being felled far beyond the margin of increase. Everywhere marginal land is being over-exploited, leaving its occupants more vulnerable to the vagaries of climate.

UNEP is using World Environment Day 1993 to examine and highlight the relationship between poverty and the environment.

The poor use fewer resources, create less waste and do less harm to the global environment than the rich. Wasteful over-consumption remains the single most powerful threat to the world's environment. There is a threshold of poverty, however, below which the poor, too, become disproportionately destructive. There comes a point when present survival means destroying resources which could have nurtured the poor for years. The most vivid image of this is the farmer eating his next year's seed grain. Other examples, less dramatic, are being repeated around the world.

Wherever extreme poverty is a problem, there you will find the poor sacrificing long-term benefits—what we call *sustainability*—to the short-term need to survive.

Thus, extreme poverty is not only a *result* of environmental degradation, it is also—to some extent—a *cause*.

Extreme poverty must be eliminated, not only for humanitarian reasons, but also for environmental ones.

There is a growing tide of opinion in the international community that says that poverty is itself one of the greatest causes of poverty. Not until the poor are given the means and opportunity to break out of the vicious circle in which poverty holds them, will real development, sustainable development, become a possibility.

The world has the ability to end absolute poverty, and with its end a major threat to the well-being of a large and growing number of people as well as to the world's environment will be eliminated. We must find the will and mobilize the necessary means to match our abilities or else this poverty and degradation will continue to affect us all.

Elizabeth Dowdeswell
United Nations Under-Secretary General
and Executive Director, UNEP

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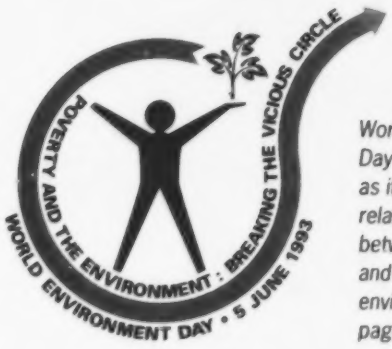

World Environment Day 1993 takes as its theme the relationship between poverty and the environment: page 4

FAO

By the year 2000, nearly three million people will be short of fuelwood: page 6

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Conventional accounting practices ignore the value of a clean environment: page 12

WWF/Hartmut Jungius

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POVERTY AND THE ENVIRONMENT: BREAKING THE VICIOUS CIRCLE

It is humanity's excesses that most threaten the planet on which we live; be they excesses of greed or of deprivation, they are both destructive.

The excesses of consumption are only too evident if you try to find ancient European forests, drink the waters of the Rhine or Poland's Vistula, swim in New York harbour or imagine how big a billion tonnes of carbon dioxide might be. These are the excesses of a society driven to consume—the excesses of industrial society, where forests were felled to smelt iron for warships, farms and to make way for cities. And these are the excesses of a society whose factories dump their waste into the rivers from which animals once drank and, most frighteningly of all, these are the excesses of a society that has pumped up the insulation of the planet's atmospheric greenhouse with carbon dioxide and other gases to the extent that oceans will expand and ice caps melt, changing the planet's entire climate.

But there is another side to this picture, where the poverty-ridden must gnaw away at tomorrow's food to survive today, and must cut down the only tree left in sight to make space for a garden that will soon be washed away by the rains or cooked by the sun, or both. Those in poverty make up, by the World Bank's estimate, 1.1 billion of the planet's 5 billion people. The absurdity of asking them to leave the forest standing and the elephant alive, when they have nothing but a neighbour eyeing the same bit of land or animal, is palpable.

This edition of *Our Planet* is devoted to the links between poverty and the environment, from the choices faced by individuals scrabbling to survive to global deforestation and water shortages. It points out some of the causes of the poverty-environment trap, such as accounting procedures that ignore resource depletion, and even worse, add pollution costs to a nation's productivity. This is is not a definitive journey across all the links between poverty and the environment, but throughout this issue of *Our Planet* you will become aware of the impossibility of solving the environmental problems we have created without a more equitable distribution of the planet's resources. If all 5 billion of us were to burn fossil fuels at the rate of North Americans, we would asphyxiate ourselves and, of course, run out of fuel overnight. If we were all to get only the 1608 calories per day that the average adult of Mozambique gets (the World Health Organization recommends a minimum of 2600 per day), millions would die, either from starvation or in the squalid wars over resources that would inevitably ensue. In the long term, there is either equity, or we perish.

UNEP and World Environment Day

Every year June 5 is celebrated as World Environment Day. This is the anniversary of the 1972 United Nations Conference on the Human Environment, held in the Swedish capital, Stockholm. It was at this conference that the decision was taken to form the United Nations Environment Programme, to be a catalyst for improved environmental policies throughout the international community, and to coordinate these policies within the UN system.

Each year, World Environment Day has addressed a different aspect of humanity's relationship with the environment—be it the impact of environmental hazards on children or the sharing of the planet's resources—and it has been celebrated in all the regions of the world: at UNEP headquarters in Nairobi, from Brussels to Bangkok, Mexico City to Stockholm and, of course, in Rio de Janeiro last year. This year, World Environment Day is being celebrated in the Chinese capital, Beijing.

DESTRUCTION AND LIFE AT A REFUGEE CAMP

D. LAZARUS

by DAVID LAZARUS

As our plane approached the refugee camp, what little green we had seen on the land beneath abruptly disappeared, leaving a barren yellow landscape punctuated only by the stick dwellings of the refugees and a little huddled group of emaciated children. This was the United Nations refugee camp at Ifo on the Kenya-Somali border. The land was as exhausted as the people.

There was Ayan (meaning 'luck' in Somali), a day-old baby girl. One metre from the proud mother sat the child's brother, eating lunch. He was all 'sticks and bones.' Flies swarmed about the place yet, despite the gloom, there seemed to be joy in the hut. According to an official from the UN High Commission for Refugees (UNHCR), a birth was still a thing to behold. 'But,' she said sadly, 'it's sad, because the child, already poor, has another label stuck on him—'refugee'—poor and without roots.'

The vegetation was a little like the life that went on in the camps—stretched to the minimum. The shrubs and acacia trees were used for everything: as corrals to keep out marauders (especially around the graves); as fencing; as walls for huts; and as sticks to keep the refugees in line at mealtimes.

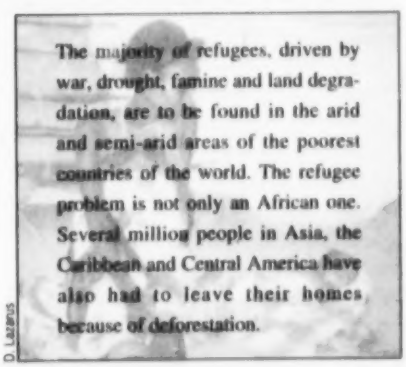
Refugees cut down trees and bushes for wood to cook food and build the frames for their houses or 'tukuls'. For every tonne of wheat and beans, three tonnes of firewood are needed. The denudation of the landscape for cooking fuels in turn exacerbates the erosion of this flimsy, brittle ecosystem. The less vegetation, the less rain that is trapped; the less trapped rain, the less regeneration; the less regeneration, the more erosion; and so people must walk further for fuelwood. And the more effort people have to put into searching for fuelwood, the less energy they have to do anything about the havoc they wreak on the land on which they try to live.

In Liboi refugee camp in north-eastern Kenya, water is being pumped from the boreholes 23 hours a day, depleting the water supply for those who will remain when the refugees eventually return home.

The camps' leaders were not unaware of the need to protect their environment, and were trying to conserve the foliage at Dahaley, a few kilometres from Ifo, but when you are surrounded by death, the life of a bush can all too easily count for little.

UNEP's role

More data need to be collected to be able to quantify the relationship between refugees and land degradation. Two of UNEP's units, the Global Resource Information Database (GRID) and the Global Environment Monitoring System (GEMS) hope, in the future, to carry out six-monthly surveys to measure the effect that the movement and habitation of refugees has had on the environment.



D. Lazarus

The majority of refugees, driven by war, drought, famine and land degradation, are to be found in the arid and semi-arid areas of the poorest countries of the world. The refugee problem is not only an African one. Several million people in Asia, the Caribbean and Central America have also had to leave their homes because of deforestation.

Global refugee population (30 June 1992)

Region	Refugee population
Africa (excludes North Africa)	5 067 715
Asia and Oceania	1 045 131
Europe	3 190 110
The Americas	1 897 395
South-West Asia, North Africa and the Middle East	7 343 140

Source: UNHCR
These figures have been provided mainly by governments, based on their own records and methods of estimation. In certain circumstances, they include persons reported by the government as being in 'refugee-like situations'. They do not cover Palestinians, who fall under a separate UN agency, UNRWA.

FAO

NO CHOICES, NO FORESTS

by SHANE CAVE

Humans generate more energy by burning wood for cooking and heating than they generate from hydro-electric dams and nuclear fuel plants. But, according to UNEP estimates, the current rate of deforestation means that, by the year 2000, about 2.7 billion people will be short of the fuel they need to cook their daily meal.

Every year, people clear and burn the trees of an area half the size of The Netherlands—22 000 km^2—so they can cook their food and heat their homes. Much of the wood is made into charcoal, because charcoal is light, burns hot but slowly and is easily broken up into manageable, burnable lumps. But making charcoal wastes 70 percent of the energy of the wood, even before it has been dug out from the ovens in which it is made. Even when the wood is burnt directly, much of the heat is wasted because the wood is in big lumps, is wet or is burnt inefficiently on an open fire or in an old stove.

Trees are actually a renewable energy source; they are simply stores of solar energy, because it is sunlight that allows them to photosynthesize and grow. But the people who depend on trees for their daily needs are burning wood faster than it can grow. Between 30 and 40 percent of the world's 5 billion people are dependent on wood for cooking and heating. In 1980, 1.3 billion people were already short of fuelwood; by the end of the century, 2.7 billion people will be short of firewood.

This rate of fuel consumption might, at one time, have been sustainable for fewer people. Now, the land on which the wood once grew is not left for regrowth, but is used for building and farming, or is simply too fragile to recover, for example, in places such as Somalia (*see page 5*) and Amazonia. But the people who use this wood do not mean to destroy their homelands; they are simply trying to survive. They have no choice but to burn the wood.

Women often have to walk for hours to collect wood, and can then carry only limited amounts—never enough to build up a sufficient supply to prepare for efficient burning.

FAO

Some of these people, those who are on the edge of poverty, can use wood more efficiently, by using better designed stoves, letting their wood dry and cutting it into smaller pieces. It is the fact that these people can reduce the wood they use, and so reduce their impact on their environment, that illustrates the cost of poverty. Many more people either do not have access to or cannot afford an efficient stove and, especially in Africa, the women spend so long walking to find wood that they do not have the slightest chance of building up a reserve of wood to dry. They are too exhausted to collect more than a few days' wood at best, and certainly have no time to collect extra wood. So they use what they can, as they find it. They very rarely have the necessary tools to cut the wood up into small pieces so that it dries out more quickly and burns more efficiently.

Share of total energy use provided by wood, selected countries, early 1980s

Country		Wood share (%)
Africa	Burkina Faso	96
	Kenya	71
	Malawi	93
	Nigeria	82
	Sudan	74
	Tanzania	92
Asia	China	25[1]
	India	33
	Indonesia	50
	Nepal	94
Latin America	Brazil	20
	Costa Rica	33
	Nicaragua	50
	Paraguay	64

Source: *Vital Signs*, Worldwatch Institute (see page 19).
[1] Includes agricultural waste and dung in addition to charcoal.

The wood stove option

Steven Karekezi, Executive Secretary of the Foundation for Wood Stove Dissemination, points out that the efficient wood stoves now being used increasingly throughout Asia and Africa can reduce charcoal use by up to 50 percent. The improvements in efficiency result from: controlling the air flow to the fuel; insulating the sides of the stove to minimize waste heat; and using small pieces of dry wood or charcoal. Karekezi emphasizes that these are not laboratory figures, but that they are the gains that can be made in everyday use. The stoves use simple designs, and are easily manufactured by trained local craftsmen throughout Africa and Asia; however, the necessary materials are required, and enough people with money to buy them. The basic materials are thin sheet metal and a clay suitable for firing.

The idea to develop and use more efficient woodstoves was initiated by Mahatma Gandhi in the 1950s. Gandhi wanted to remove wood smoke from Indian household kitchens, and so improve the health of women and children. Wood smoke that is trapped in the cooking places of the poor causes considerable lung damage. Gandhi's improved wood stove movement was reinvigorated and given global significance with the energy crises of the 1970s, when the contribution of biomass (mostly wood, but including dried animal dung) to national energy consumption began to be quantified. Biomass combustion in Asia and Africa is currently estimated to contribute, on average, 35 percent of the energy used annually, but in some countries it makes up much more than that (*see box*).

With the importance of biomass in these developing countries, the expense of fossil fuels drove people to find ways to make their other fuel go further. The global significance of deforestation was also recognized; wood burning contributed to the greenhouse effect, and tree felling reduced the planet's capacity to reabsorb the carbon dioxide given off by combustion and also exposed the top soil to greater erosion.

Furthermore, there has been a growing awareness of the sheer scale of the health risk posed by wood smoke inhalation. In 1987, the World Health Organization declared that respiratory diseases were the principle cause of death among children younger than five, with kitchen wood smoke being one of the major causes of respiratory disease.

Improving the access of the poor in Africa and Asia to these simple, but effective, stoves will be a crucial factor in the fight to improve the quality of their lives and their environments.

The table on the left shows the estimated rural and urban use of improved wood stoves. These are indicative figures only; because these stoves are manufactured in the informal sectors of most economies, their use is much more widespread than these figures indicate within these and neighbouring countries.

The Foundation for Wood Stove Dissemination is based in Nairobi, Kenya, and has focal points in China, Guatemala, the Indian sub-continent, Indonesia, Kenya, Senegal and Zimbabwe.

Estimated use of improved wood stoves (1980–92)

Rural	
China	90 000 000–140 000 000[1]
India	5 000 000
Kenya (since 1986)	80 000
Urban	
Sri Lanka	150 000
Kenya	500 000
Institutional stoves (such as schools and hospitals)	
Kenya and Tanzania	30 000

[1] According to the Foundation for Woodstove Dissemination, not all the stoves initially produced in China were used, but changes in the promotion of the stoves have dramatically increased their use over recent years.

Energy options for Africa

The UNEP Collaborating Centre on Energy and Environment at the Risø National Laboratory, P.O. Box 49, DK 4000, Roskilde, Denmark, in conjunction with The Foundation for Woodstove Dissemination and the African Energy Policy Research Network, has just published Energy options for Africa: environmentally sustainable alternatives, (Zed Books). Edited by Stephen Karekezi and Gordon Mackenzie, this book addresses a wide range of the energy issues faced by African countries.

New, more efficient wood stoves (below) conserve energy and reduce the incidence of respiratory disease caused by smoke inhalation from inefficient stoves.

Paul Harrison/Panos Pictures

THE LAND OF MILK FROM WATER

Destitute villagers put their environment first and find it pays.

ANIL AGARWAL *reports from India.*

Photographs courtesy of the Centre for Science and Environment, New Delhi

Sukhomajri village had a highly degraded watershed with soil erosion rates reaching 900 tonnes of soil per hectare of land ...

Environmentally, the 1980s were a dismal decade. We became more aware of land degradation, desertification, deforestation, and air and water pollution, and by the end of the decade, we had added destruction of the Earth's ozone shield and climate change to a list seemingly set to plunge us into an ecological Armageddon.

But if humanity took two steps backward in its efforts to combat the environmental crisis, it also took a few steps forward. The most heartening response in India came from rural communities, many of which took their future in their hands and made their degraded land green, showing that sustainable development can be an ordinary, everyday reality.

In the early 1980s, international experts were still discussing the conflict between the environment and development, and which comes first. But grassroots movements, such as the famous Chipko Movement in which Himalayan women threatened to hug trees in danger of being felled, had already begun to show that it is the poor who suffer the most when the environment is degraded. And, therefore, the poor have a vested interest in the sustainable management of their natural resource base, both for survival and for growth. Soon, development experts began to accept that any development that degrades the environment degrades the people who live in it and exacerbates poverty, and so obviously cannot be called development.

Nearly one-third of India's land area is today considered a wasteland. Both agricultural productivity and production from grasslands and forests in these areas are very low. As a result, there is an acute shortage of food, fuel, fodder and daily water. Soon after the monsoon, the streams run dry and groundwater levels fall dramatically. A woman's life is one long trek to collect basic needs such as water and fuel.

But that is no longer the case in Sukhomajri village in the sub-Himalayan Shivalik hills. Over-grazing and deforestation had left the village environment badly degraded, with extremely high rates of erosion, able only to support a destitute people. Crop lands produced a few tonnes of grains for food. The deficit was made up with purchases from the local town with the help of earnings sent back to the village by migrant workers.

In 1977, soil conservationist Priya Ratna Mishra tried to dissuade the villagers from uncontrolled grazing in their watershed. The village stream was carrying thousands of tonnes of silt to a large reservoir which supplied water to the state capital, Chandigarh, and was reducing its water-holding capacity. But Mishra's pleas fell on deaf ears. Sukhomajri's shepherds had their own problems of daily survival. Their goats at least gave them some income and support.

... but Sukhomajri's villagers united to build an earthen dam on the local stream to irrigate their fields. The dam changed everything: ...

... grass and trees returned to the watershed; fodder and firewood became abundant; and milk production increased dramatically ...

... and with irrigation from the small dam, villagers began to harvest three assured crops, instead of just one risky crop, a year.

But things began to change when a village elder suggested to Mishra that he should bring the villagers water. So Mishra built a small earthen dam to hold back the monsoon rain. Villagers immediately asked Mishra for the water and, in return, promised to protect the watershed, especially as the silt would now accumulate in their own reservoir. The forest department also took a daring step to let the villagers manage the watershed. The villagers, in turn, banned all grazing in it and levied a charge on every family collecting fodder from it. In five years, the irrigation helped the villagers to double their grain production, turning the village from a food importing one to a food exporting one. As the grass and trees regenerated in the watershed, the villagers began to get more fodder. They sold off their goats and bought high-yielding buffaloes. Today, the village sells more than US$10 000 worth of milk a year.

Hunger and destitution have disappeared. The village collective sells the extra grass from the watershed; in 1989, the village became the first in India to be levied income tax on its earnings from a regenerated forest. The average earnings of a household in the village have increased by about US$200 a year, and all on a sustainable basis. Mishra estimates that if the forest department allows the villagers to harvest the wood in the watershed, they could net at least US$100 000.

During a television interview with an elder from the village, he suddenly asked me: 'Tell me, sir, what do you see in this reservoir?'

I hesitantly replied, because my answer seemed so obvious: 'Water.'

'No,' he said, 'I see milk in it. It is this water which gives us milk and honey.'

In Ralegan Siddhi, the use of dams has increased groundwater supplies, enabling villagers to cultivate crops in even the worst droughts. Crops which consume high levels of water are forbidden, so that water can be shared equitably.

Sukhomajri is not the only village in India where the people have responded to the ecological crisis. In Ralegan Siddhi, in the drought-prone district of Ahmednagar, Krishna Bhaurao Hazare has achieved a miracle that has turned the village into a Mecca for the environmentally concerned. Hazare, a jeep driver in the Indian army, returned to his village in the mid-1970s to find the environment extremely degraded, the villagers extremely poor, liquor brewing the sole occupation, and heavy male migration. Hazare slowly mustered support for a campaign against liquor brewing and turned the community's attention to its environment.

Taking advantage of the government's rural employment programmes, Hazare mobilized them to build earthen dams across every drainage channel cutting across the village, and to plant and protect trees on all the hills around. With the monsoon water arrested, groundwater levels started to rise and stabilize. The village community then unanimously agreed to share the groundwater equitably. The result is that, today, no villager has to migrate and, even in the worst of droughts, as in 1992, the villagers have enough water to cultivate their crops. The village now has a small branch of a national bank and a very high level of savings.

Yet another example of a village managing its resources comes from Seed, a village in the heavily deforested hills of the Aravalli range, which buttresses the arid desert of Rajasthan. For miles and miles, there is no tree in sight. Except in Seed, which was registered under the Gramdan Act promoted by Gandhian activist Rameshwar Das to allow villagers to manage their own environment. Under the law, the assembly of village adults is empowered to take all decisions about the village environment, and has the right to penalize and prosecute like a village court.

The Aravalis are today one of the most degraded hill ranges in India ...

... but the forests of Seed village, protected by the villagers themselves, give them grass year after year.

Seed has a well-thought-out land-use plan: it has a village forest, where no grazing is allowed, and villagers gather once a year, on an agreed day after the monsoon season, to collect grass from this forest. In other areas, villagers can graze their animals, but they cannot break even a leaf from the trees. Even private trees cannot be felled without the permission of the village assembly, which is granted only in case of dire need.

Environmentalists across India are clearly excited that sustainable development is indeed possible. Sukhomajri, Seed and Ralegan Siddhi are just three outstanding examples. There are hundreds of others, which are also responding to the ecological crisis. But they need a nudge from the government, which must enact laws to create democratic village institutions that have legal control over their environment. Sukhomajri, Seed and Ralegan Siddhi show that self-governance in ecological self-interest promises a very green future.

OPINION

POVERTY AND DESERTIFICATION: CAN THE CYCLE BE BROKEN?

The debate on desertification has for too long been focused on the physical environment. While it is important to understand the process of desertification and its interaction with climate change, soil erosion, deforestation and drought, it is not enough to end there. The debate must be broadened to include the eradication of poverty and to link humans to the causes of desertification.

In order simply to survive, the poor are forced to engage in economic activities that are unsustainable. The degradation of living standards will continue as long as the poor have unequal access to natural (physical), economic, social and technological resources. It is impossible to solve the problem of desertification, for example, without simultaneously beginning to alleviate poverty and fulfilling basic needs.

The question of desertification should not be seen as a problem of the developing countries alone. It must be viewed in an international context, since it cuts across boundaries and is influenced by the state of the world economy, commodity prices, interest rates, energy imports, cultural behaviour and conditional aid packages. These external factors combine with internal ones, such as inappropriate political and policy instruments, low environmental investment levels and high population growth, to work against good land management and exacerbate desertification.

Trade, poverty and desertification

Developing countries are in a dilemma. Their economies are largely dependent on the export of raw materials, such as timber, agricultural crops and minerals, into markets over which they have no control. Hence, in order to fund development, earn foreign currency and service debts, they have to over-exploit their natural resources.

In the 10 countries of the Southern Africa Development Community (SADC), agriculture contributes 35 percent of GDP, 25 percent of foreign exchange and employs 80 percent of the labour force. The bulk of export earnings in these countries comes from a few products. According to the World Bank's 1987 annual report, Malawi received 68 percent of its export earnings, and Zimbabwe 50 percent, from tobacco, while Tanzania received 45 percent of its total export earnings from coffee.

Although heavily dependent on exports of agricultural products, SADC countries have faced declining commodity prices on the world markets. Debt servicing as a percentage of returns from the export of goods has increased, forcing countries to export more to maintain static incomes. It is now clear that much of the region's natural resource potential is being over-exploited. The benefits from this do not accrue in the developing countries. In Zimbabwe, more than 100 000 hectares of forest are cleared annually due to agricultural expansion. This trend can be expected in other countries that are dependent on export earnings from agriculture. By expanding agriculture, Zimbabwe hopes to increase the value of exports from US$663 million in 1990 to US$922 in 1995.

This dependence on a few commodities for revenue and contribution to GDP has resulted in economic ruin. Angola is dependent on oil, which brings in 88 percent of total export earnings. Zambia is dependent on copper, which contributes 85 percent of all export earnings, and Botswana relies on diamonds for 78 percent of all its export earnings. Prices for oil, copper and diamonds are determined outside the exporting countries.

With respect to trade, developing countries must push for equal trade terms and reduce their dependence on exporting basic commodities. To achieve this, investment in technologies and skills is required, with the support of the international community. Developed countries must also commit themselves to guaranteeing minimum conditions for human survival by investing in social and technological skills, and developing institutional capabilities.

Developing countries must also ensure that GATT addresses the impact of unequal trade on the environment. The GATT negotiations have involved attempts to reduce the role of the state and government to intervene in the market and the economy. This, in essence, gives more space to transnational corporations and the creation of monopolies, even further marginalizing the poor in the South. The assumption is that markets are perfectly competitive, and that buyers and sellers can benefit from increased trade. It is further assumed that wealth generated from increased trade will trickle down to address associated environmental problems. The World Wide Fund for Nature argues, correctly, that this is unlikely to happen, since there are no existing mechanisms to guide these financial flows. If it were possible, the world would be a safer place today. But it is clearly not the case. If environmen-

The marginalization of the poor in Zimbabwe

The link between the state of the economy, poverty and the environment is evident in developing countries where the entire economy is based on natural resources.

In Zimbabwe, for instance, the agricultural sector contributes about 14 percent of Gross Domestic Product (GDP), employs 24 percent of total formal labour and contributes 30–40 percent of total export revenue. It supplies the manufacturing industry with agricultural raw materials and buys inputs from industries based on agriculture. Mining contributes 7 percent of GDP and more than 90 percent of the mining product is exported. The country's main exports are tobacco, sugar, cotton, gold, ferrochrome, asbestos, nickel and steel. The agricultural and mining sectors both support the manufacturing sector, which contributes 27 percent to GDP.

At a national level, the problem arises from the ownership patterns that prevail in commercial agriculture, mining and manufacturing. Natural resources are owned by private interests, who have marginalized the poor and landless. This has meant that various groups of people do not have access to productive employment and incomes, forcing them into subsistence agriculture to survive. The forest clearance involved in this farming exposes ever more land to erosion and speeds up water loss, two of the key causes of desertification.

Zimbabwe's environmental problems are therefore shaped by the structure of the economy.

Dr Yemi Katerere, the chairman of ZERO, a regional network of environmental experts in Harare, Zimbabwe, argues that debate on desertification encapsulates many of the issues raised about sustainable development in developing countries.

tal problems are to be solved, then GATT rules need to be amended to provide a regulatory framework using state intervention and economic instruments. Developed countries must become more transparent in their trade dealings with developing countries, and must stop unilateral trade barriers.

Macro-economic policy

The importance of incentives and/or disincentives is underplayed by both planners and policy makers when formulating programmes of sustainable development. Some policy instruments, such as tax, pricing and subsidies, can work against sound environmental management if not properly framed and applied. The cost of natural resources in most developing countries too often fails to reflect the real value of the resource, so underpriced resources are overused. A good example of this is the harvesting of wood for domestic energy and industrial purposes. In Zimbabwe, at least 50 percent of the total energy consumed is fuelwood. Furthermore, almost 80 percent of the rural population rely on wood as a primary energy source. The bulk of this wood is gathered free, and is sold without any provision for the cost of replacing it nor the environmental costs incurred by no longer having the standing trees. There is an urgent need for research into how to put prices on natural resources to reflect their real value (*see page 12*).

Many developing countries have been forced to adopt World Bank and IMF designed Structural Adjustment Programmes (SAPs) in order to liberalize their economies. SAPs are backed by donors and other finance institutions, and have focused on agricultural production and pricing, industrial development and exporting to earn foreign exchange, while ignoring the human and environmental impacts of these policies. Most SAPs have been fueling poverty by encouraging agricultural exports at the expense of food for local consumption.

For developing countries to formulate long-term goals, they now need to articulate a clear vision of the type of economy each country wants to evolve. The decision will have to involve local communities, recognize the link between poverty, the environment and development, and the outcome will, of course, have to be environmentally sustainable.

If the quality of life of the people of developing countries is to improve, then governments must subscribe to the principle of good governance and be prepared to take brave decisions about promoting alternative livelihoods for their people. Where certain livelihoods are clearly unsustainable and contributing to desertification, then alternatives have to be found. Many economies in Africa, as already mentioned, are agriculturally driven. The bulk of deforestation in southern Africa is caused by clearing the land for cropping. While it is accepted that some forest land will be lost to agriculture, there has to be a balance, and this can be brought about by creating alternative livelihoods. In Malawi, individual agricultural land holdings have continued to diminish, to the point at which many are too small to provide subsistence.

Institutional link

One of the requirements for sustainable development is to have sufficiently developed institutional capacity and some devolution of authority. This will apply to formal government structures, legal and policy instruments, training capacity and informal institutions.

Developing countries' institutions are still evolving, and are not well equipped to deal with complex issues such as desertification and sustainable development. This lack of capacity hinders development projects, technology transfer, the ability to talk clearly with multilateral and bilateral institutions, and participation in global debates on poverty alleviation.

The role of multilateral institutions in the economies of developing countries needs urgent review, so that the needs of developing countries are not ignored. The flow of funds through these institutions is not always efficient nor in the interests of the recipient countries. The multiplicity of multilateral institutions, decisions and programmes has made it difficult for poor nations and people to achieve maximum benefits. The number of multilateral institutions must be reduced, and the funds must flow directly to the poor nations themselves.

Resources to break the link

Firstly, a consensus needs to be reached on the principle that it is the responsibility of all nations to address poverty in order to achieve sustainable development. Poverty is an issue of global concern, and its alleviation can bring about the efficient, comprehensive and integrated utilization of the world's natural, financial and human resources.

If this principle is accepted, then the resources needed to break, for example, the desertification-poverty cycle, should be mobilized through the international convention on desertification. It was agreed in Rio de Janeiro last year to draw up this convention, and preliminary negotiations will begin soon.

The lobby for resources should also be broad-based, and should involve non-governmental organizations and the private sector at international, regional and national levels. Developing countries' governments themselves need to commit new and increased financial resources towards combating desertification and poverty.

The mobilization of resources has to move beyond simple policies and sovereignty to an integrated global approach that can address technology transfer, research, skills development, advocacy, investment, institutional strengthening, marketing and information exchange.

Editor's note

Desertification is a process of land degradation where previously stable environments are degraded by humans through erosion, deforestation, overgrazing and overcropping, and waterlogging and salinization. These processes are distinct from the existence, and expansion and contraction, of naturally occurring deserts.

ABOUT THOSE ACCOUNTS: reforming the masquerade of progress

SCOTT VAUGHAN

argues that current accounting procedures ignore environmental sensitivity and disguise as prosperity the poverty that 'economic success' will bring to the planet.

It is dusk in Alaska's Prince William Sound, the scene of the *Exxon Valdez* oil spill. The lone call of a distant bald eagle kindles hope that the birdlife has finally returned to this northern wilderness. But the sound soon fades.

Visitors are hard pressed to conjure up images of the catastrophe that engulfed this area four years ago. If you look closely, though, you can still see lumps of hardened tar wedged between polished and shampooed rocks. In addition to the devastating spill itself, scientists now believe that the scramble to minimize the damage by dousing the rocky shoreline with chemicals and steam may have destroyed micro-organisms that play an important, if unknown, role in this fragile ecology.

Four years after the worst oil spill in US history, the name *Exxon Valdez* has become etched on the world's conscience—a legacy to humanity's unrelenting assault upon Nature. In the aftermath of the March 1989 spill of 38.5 million litres of oil into the cold Alaskan waters, an estimated 435 000 birds have died, together with 1000 sea otters, and untold numbers of fish and marine plant life.

More baffling than the destruction itself has been the response of conventional accounting practices, not only to this disaster, but to accelerating natural resource degradation, spiralling pollution, and the proliferation of hazardous and toxic wastes in general. Under the current system of measuring today's icons of national wealth, Gross National Product (GNP) and Gross Domestic Product (GDP), natural resources and a clean environment—including a healthy marine ecosystem, and fresh air and water—have no economic value because they are not 'exchanged' in the market-place. By the same logic, pollution is ignored in calculations of a nation's wealth because it is outside, or 'external' to, market activity.

Ron Giling/Panos Pictures

Under the current system of measuring today's icons of national wealth, natural resources and a clean environment ... have no economic value because they are not 'exchanged' in the market-place.

Although incapable of attaching a price to blackened beaches and the appalling carnage of wildlife, accounts have been quite adept at tallying up the economic activity sparked by the spill. Thus far, the *Exxon Valdez* disaster has contributed more than US$2 billion to Alaska's economy—by creating jobs to clean up shores, filling hotel rooms, cramming airplane seats with experts and media, and purchasing and transporting clean-up equipment. As the Washington-based World Resources Institute has noted, 'Economic disaster masquerades as progress'.

Despite the obvious flaws of such a system, any economist can tell you that GNP was not created as a measure of social welfare, including environmental protection, but as a barometer of economic activity. GNP measures transac-

tions that occur in the market-place, and includes some capital assets.

That the environment is basically ignored in today's system of national accounts is hardly surprising, since the system grew out of the preoccupations of the 1930s. At that time, the prices of raw materials were at an all-time low. Pollution was barely a concern. The issues that preoccupied those who launched national income accounts—including noted British economist John Maynard Keynes—were unemployment, the balance of payments and economic cycles. Issues that preoccupy policy makers and the general public today—the depletion of the ozone layer, the threat of climate change and global warming, and the mass extinction of biological diversity—would have been regarded half a century ago as beyond the realm of even science fiction.

But in light of the now evident environmental crisis, there is a growing recognition among economists, non-governmental organizations, international organizations such as the United Nations, and national governments that our ability to respond to environmental problems is constrained. The problem lies in our preoccupation with economic indicators that are incapable of measuring ecological destruction.

The system we have inherited looks solely to exchange as representing a contribution to income. Under these assumptions, a tree has no intrinsic worth unless it is felled. Minerals and other stock resources have no economic value unless they are mined or earmarked for future exploitation. Intact marine environments, such as Prince William Sound just before the *Exxon Valdez* accident on a cold March night, have no economic value unless exploited for commercial use.

The current UN System of National Accounts (SNA) represents the standard benchmark used to measure economic performance. The backbone of SNAs are human-made assets and capital formation used in production: tangible assets such as buildings, machinery and equipment used in production, as well as inventories and consumer durables. One exception that gives some hope to ecological considerations

FAO

Conventional accounting practices ignore the value of a clean environment. 'Green' accounting aims to put a monetary value on the 'free' resources—such as clean air and water—which we so easily take for granted.

is what is loosely termed 'land'. However, land is valued only insofar as it contributes to market exchange and income generation, through timber production, agricultural output and so on. Basic environmental and natural resources are not measured, because they are not valued.

This fundamental contradiction has provoked a growing number of experts to push for reforms in how we, as individuals and societies, regard wealth. According to Kirk Hamilton of Statistics Canada, 'What is unsatisfactory in this treatment of wealth is that it puts the calculation of the net worth of Canada on the same footing as that of Hong Kong, for example, almost completely ignoring resource endowments [such as standing forests, clean water, minerals, groundwater aquifers and healthy soils]'.

Although some 'deep ecologists' may have difficulty tagging 'the environment' with a commercial price, evidence suggests that, without a specific monetary value, resources that have erroneously been regarded as 'free'—such as clean air and water, standing forests and schools of fish—have not been conserved. Rather, the lack of a price gives the illusion of infinite reserves, inviting reckless behaviour. Like it or not, more often than not, we waste that which we do not value. By contrast we cherish, and use wisely and efficiently, that which we view as being scarce and precious. That is the basic logic behind the current push to reform national accounts. Unless a symmetry is struck between environmental goods and services and their value as reflected in market prices, then basic principles such as resource scarcity, conservation and increased efficiency will not be applied.

However, moving from general consensus to bottom-line reforms is very

Ron Giling/Panos Pictures

Heavy industry surrounding the Mexican town of Minatitlan may have created wealth and employment, but not without the cost of severe air pollution and the health hazards that go with it. Yet how can these things be valued in monetary terms?

difficult. Like the global environmental agenda itself, progress requires consensus. But the difficulties are enormous on questions of pricing policies. What price are people willing to pay to conserve and sustainably manage tropical forests teeming with undiscovered species—species which may hold clues to curing cancer or solving the AIDS crisis? What value do people attach to a predictable climate, an intact ozone layer, and clean air and drinking water? How do we go about attaching a price tag to a tree that stands untouched in a deep forest, or to marine mammals that are rarely seen?

These are absolutely critical issues if the goals of environmentally sound and sustainable development are to transformed from vague goals into hard-nosed, clear and concrete policy reforms. As Agenda 21 of the Earth Summit recognized, reforms are needed in our basic economic assumptions, tools and indicators, so that markets move from ignoring environmental considerations to placing environmental considerations at the centre of decision making. That, after all, is the goal of sustainable development: the integration of economic and ecological goals.

There is, however, some progress in a number of countries—including Canada, Germany, The Netherlands, Norway and the United States—towards the 'greening' of national accounts. At the international level, the UN Statistical Office, the World Bank, UNEP and others are working on environmental and natural resource accounting procedures.

One sign of hope is a system known as 'satellite accounts', which will subtract the costs of 'defensive expenses'—such as the clean-up of the Exxon Valdez accident—from national income.

Frank Bruder/Peter Arnold Photos

One sign of hope is a system known as 'satellite accounts'. Currently designed to sit alongside conventional systems, satellite accounts encompass a myriad of environmental and natural resource considerations. For example, these new systems will value stocks of natural resources. They will include not merely manufactured products, but also untraded by-products, notably pollution damages, or so-called 'defensive expenditures'. By this reckoning, costs such as the clean-up of the *Exxon Valdez* accident would be subtracted from national income. Satellite account systems will also adjust discount rates, so that the rights of future generations are brought forward. And they will introduce depreciation rates for environmental assets and natural resources.

Progress has already been made in the area of treating natural resource depletion as equal to the depreciation of capital and other equipment. Recent research by the World Resources Institute in Washington, DC (see *Wasting assets: natural resources in the national accounts*, December 1991) has recommended deducting natural resource depletion from conventional GNP calculations. This approach springs from two basic assumptions: one, that natural resource stocks ought to be regarded as national assets in roughly the same manner as reproducible assets such as equipment; and two, that the basis of valuation for natural assets should be what is called the 'net price method', that is, the net price of resources equals the market price of the resource minus the average cost of production.

Such approaches are helping to expose countries—especially developing countries whose economies are resource-intensive—to the economic, as well as the environmental, folly of short-term, fast-track development. *Wasting assets*, for example, concluded that the GNP rate for Indonesia, conventionally measured at a 7.1 percent increase in GNP, shrank to 4.0 percent because of deforestation and other resource extraction practices.

The 'greening' of income calculations offers the hope that a healthy environment will become as important as conventional preoccupations with maximizing GNP. While reforming national accounts might not help the wildlife of Prince William Sound to recover, it will make us all value healthy ecosystems far more.

For the bald eagle circling alone above Prince William Sound, that just might mean that sustainable development will not rest solely on a wing and a prayer.

It is traditional to assume that a tree has no intrinsic worth unless it is felled. But the long-term environmental cost of deforestation is far greater than the commercial value of the timber it provides.

FAO

Bruce Paton, Panos Pictures

POOR WATER, POOR PEOPLE, POOR WATER

by SHANE CAVE

'Nearly one out of every three people in the developing world—some 1.2 billion people in all—do not have access to a safe and reliable [water] supply for their daily needs. Often, they resort to shallow wells or stagnant pools that are easily contaminated with animal waste. As a result, water-borne diseases account for an estimated 80 percent of all illnesses in developing countries. And women and children walk several kilometres each day just to collect enough water for drinking, cooking and cleaning, a drudgery that saps time and energy from more productive activities.' Sandra Postel, *The Last Oasis*, Worldwatch, London, 1992.

It is very simple really: the human body is mostly made up of water, and without water we will die. Getting enough clean water to more than a billion of the world's poor is going to cost more than they can afford, so many of these people will die. In an ironic twist, the United Nations' clean water decade, 1981–1990, showed just how awesome the task of providing clean water will be. The decade saw considerable success; globally, the number of people without safe water decreased from 1825 million to 1232 million, an improvement of 593 million, and the number of people without adequate sanitation remained virtually the same. But these global figures disguise the worsening situation in some regions, especially Africa and in cities throughout the developing world. A combination of high birth rates and the drift of rural people to cities during the 1980s meant that, by 1990, there were 31 million more urban dwellers without safe water than there had been 10 years earlier. The situation for urban sanitation was even worse; there were 85 million more people without adequate sanitation in 1990 than there had been in 1981.

Of course, the two are not unrelated; in developing countries, it is the inability to keep human and industrial waste out of the water supply that provides the single biggest problem for urban dwellers. The consequences are hardly surprising, as pointed out by Sandra Postel, '... waterborne diseases account for an estimated 80 percent of all illnesses in developing countries'. The World Health Organization, using 1986 figures, has estimated that dirty water causes 27 000 deaths a day, and most of these are people too poor to escape from the cycle of poor waste disposal and dirty water.

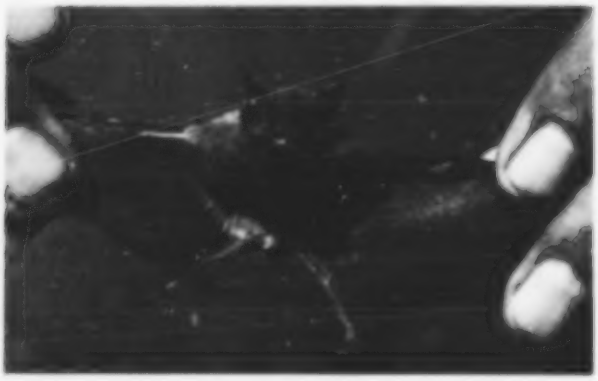
For most rural dwellers, however, things got better during the clean water decade. Globally, the number of people in rural areas without safe water decreased by 624 million, and those without adequate sanitation decreased by 79 million. In fact, rather more was achieved than these figures indicate, because the rural population was increasing at the same time that total numbers without water and sanitation were decreasing. But global figures are misleading; while great progress was being made in Latin America and the Caribbean, and Asia and the Pacific, especially China, Africans south of the Sahara were increasingly worse off. Despite achieving their targets for urban water and sanitation, the number of people in sub-Saharan Africa without safe water and adequate sanitation increased by about 30 percent.

While California can afford to pipe millions upon millions of litres of water to its dry, but populous, south where each person uses hundreds of litres every day, Africans can spend more than an hour walking to get only as much water as they can carry, and then spend the same time walking back to where they started.

According to the report *World Resources 1992–1993*, jointly published by The World Resources Institute, UNEP and UNDP, 'Acute water shortages in many parts of the world require solutions that will be costly, technically difficult, and—in many regions—politically sensitive'. For all that people of the industrialized world have polluted and guzzled their water supplies, the reality is that they have the resources and expertise to deal with the problem; all too often, the poor do not.

If trends like this continue, the availability of drinkable fresh water promises to be one of the major limitations to future growth and a constantly growing source of conflict.

WHEN HUMAN MEETS ANIMAL



Goaded by photos of beautiful birds squashed in cages, bloody corpses and piles of ivory, sentiment has driven the protection of endangered animals such as elephants and rhinoceroses. But, all too often, the poverty which drives people to poach is neglected, as **CHNG SOH KOON** *of WWF International reports from Thailand.*

Khun Toon Siammon used to be a wildlife poacher. He felt he had no choice; that was the only way he could earn money to buy a farm.

Khun Toon came to Ban Klong Sai, a village 300 kilometres north-east of Thailand's capital, Bangkok, 17 years ago to join his wife's cousin. Originally a Mon from Myanmar (Burma), Khun Toon wanted to be a farmer, but he had no money. To escape from his destitution he turned to Khao Yai, Thailand's first national park, established in 1962.

Khao Yai means 'big mountain.' It takes its name from the distinct mountain that sits in the south of north-east Thailand. Covering 2168 km^2, it ranges from prairies to virgin forest to mountains, and is home to otters, gibbons, tigers, gaurs (wild oxen) and the highly endangered Asian elephant.

Such a storehouse of free goods was an obvious source of income so, despite the obvious risks, Khun Toon began trapping the park's animals to sell them, and began collecting *Mai hom*, a valuable scented wood.

'I knew I could get arrested if a ranger saw me in the forest,' he said. Others also saw the opportunity for quick money, and the toll quickly began to show on the park's wildlife. 'At times, I could hardly find any animals.' But, faced with the choice between surviving in a cash economy or the lives of animals, Khun Toon felt he had no alternative but to continue, stopping only when he had enough money to buy some land.

When farmers such as Khun Toon have got their land, they still face the destructive demands of the cash economy, for most of the farmers in Ban Klong Sai have only been interested in growing corn for export to Europe as cattle fodder. This means destroying a diverse ecology with a great variety of plants, animals and insects to allow a single crop to grow. Many of the animals, birds, insects and organisms that are specially adapted to this environment inevitably perish with only corn to feed on, and without the variety of life which had previously formed their prey.

Because of the cyclic nature of his income from only one crop, Khun Toon, and many farmers like him, were forced to borrow money in between harvests. Villagers who cannot repay their loans are faced with selling their land, or going back to plundering the wildlife or illegal logging.

'We have to raise villagers' incomes and reduce their debts,' says Khun Chan-Ek Tangsubutra, a conservation officer with Wildlife Fund Thailand

Many people are trapped into poaching and selling animals from Thailand's national parks in order to earn enough money to buy land for farming.

Cash cropping results in the destruction of the diverse native ecology, and leaves farmers dependent upon loans between harvests.

(WFT). 'Only then can they be in a position to become nature conservationists.'

To try and break the cycle into which the farmers had become trapped, lured by cash cropping, WFT has been encouraging farmers to diversify their farming practices, spreading their risk and restoring greater diversity. This means using indigenous crops such as jack fruit, tamarind, mango, aubergine and banana. With these crops already growing in with his corn, Khun Toon intends adding longan, lychees and durian to his new crops, and then building a fish pond.

This diversification not only lowers Khun Toon's vulnerability to price movements in just one crop, but also increase his total income. His two rai (3200 m^2) farm yields 800 kg of corn, worth 1200 baht (US$47). The same area will yield 660 kg of tamarind, which earns about 40 000 baht (US$1563) and, unlike corn, the tamarind trees produce for decades.

The same approach is winning over other farmers in neighbouring villages, such as Wangsai, where a local monk and a village elder have begun the push to diversify.

Not only will the villagers earn more from this approach, they will also be more self sufficient and less dependent on outsiders. In this situation, the villagers of Ban Klong Sai, and their neighbours, can afford to protect their forests and the animals that live there.

The biggest victims of poverty

Among the worst affected victims of the poverty-environment cycle have been the African elephants, poached in numbers that were inconceivable 30 years ago. From a population of about 1.2 million in 1981 there were approximately 610 000 left by 1989, a disproportionate number of them females, as the males had been hunted for their tusks. The poaching was driven by high world prices for ivory during the late 1970s and 1980s, although this is now a thing of the past, as the price of ivory collapsed after international trade in ivory was banned at the 1989 Lausanne meeting of the parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

But poaching has continued, albeit on a reduced scale, for many of the poachers were, and still are, driven not by the quest for big money from ivory sales, but by a quest for any money at all. Faced with animals that tramped through their crops, local people made an obvious choice to cash in on such a lucrative nuisance. But this was not simple opportunism. Cut off from the cash economy and much of their traditional land, and surrounded by rapid human population growth, the poachers often felt they had few choices. Most of those out in the field, of course, did not make big money from their labours; they were desperate and would accept modest sums for the tusks, forcing them back to kill yet more elephants.

Betty Press/Panos Pictures

But, since the ivory trade was banned and poaching slowed down, efforts have been made to recognize the needs of people who live near elephants and who still see these animals as a nuisance—but now a less valuable one. At a meeting held at UNEP's Nairobi headquarters in January 1992, African countries with elephant populations met donor countries. Detailed conservation plans were prepared for 33 of the 35 countries with elephant populations, including calculations of the costs of implementing the plans. While a lot of the money pledged at the conference included protection measures, such as radios, trucks and other equipment, for wildlife protection staff, promotion of elephant-based tourism for the benefit of local people was also a significant part of the most of the plans.

Kenyan wildlife expert Dr Perez Olindo, in an interview during the meeting, argued that, 'Elephants are good workers because, through tourism, they attract money into the respective countries. ... Once those communities see that elephants positively affect their development expectations, they are going to set aside a portion of their land for elephants.'

Since that meeting, there has been an increased effort made to channel the financial benefits from elephant conservation directly to the people who might once have poached them.

But breaking out of the poverty trap into which the elephants have fallen will take not only money, according to Olindo. The issue of human numbers must also be addressed. 'The question relating to human population cannot be solved by money; it is going to be resolved by a change of attitude and also the intensification of government policies on national population.'

LOOK WHAT THEY'VE DONE

UNEP's Global 500 recipients offer inspiration to those who feel oppressed by the poverty that surrounds them.

Steve Jackson

Young Mathare footballers qualify to play football by clearing rubbish and drains in their Nairobi slum; they won UNEP's Global 500 award in 1992.

Each year since 1987, on World Environment Day, UNEP has recognized the environmental achievements of individuals, organizations and corporations by adding their names to its Global 500 list. These are people who, on their own, have made a difference to the little bit of the world that surrounds them, or to the attitude of the people who make their world like it is. Or they are groups or business organizations which have sought to bring about changes in the way people, governments and businesses behave or they have changed their own behaviour.

By the United Nations Conference on Environment and Development in Rio de Janeiro last year, 500 names had been added to the list, and more will be announced on June 5 this year.

Among those already on the list are many who, in the midst of poverty, have made their own contributions to breaking out of the poverty and environment trap. But, by definition, these are exceptional people with enthusiasm and/or ideas above those of ordinary people. But they provide an example and hope to many who will aspire to emulate the achievements of these few. Here are just a few of those who, despite poverty, have found the energy to improve their environment.

The Mathare Valley Sports Association, Nairobi, Kenya (1992 recipients)

Some of the poorest people in the world live in the slums of Mathare Valley, Kenya, and well over half of them are children. The Mathare Valley Sports Association was created as a small self-help programme by local youth to organize their own slum clean-up projects and sports leagues. Kicking a soccer ball became a cherished thrill in the midst of the squalor and tedium of daily life. But in order to qualify, the kids had to join in the cleaning up of their surrounds. No rubbish shifted, no drains unblocked—no game. That ethic is strictly adhered to, yet every weekend nearly 1500 children take to sports grounds around Mathare Valley, a cleaner, healthier place because of their efforts.

Kerala Sastra Sahitya Parishad (KSSP), Trivandrum, India (1990 recipients)

KSSP is a non-governmental organization with more than 50 000 members. It has been active in India since 1962, fighting to protect natural resources and, where natural resources were used, trying to ensure that they were used rationally.

One of its major successes was saving the Silent Valley tropical evergreen forests from being destroyed by a hydroelectric dam. It has also involved the people of hilly areas of Kerala in promoting sustainable land use practices in areas that are highly vulnerable to erosion if overused.

Pamuchigree Nembire, Centenary, Zimbabwe (1989 recipient)

In 1982, Mr Nembire, a traditional chief in Eastern Zimbabwe, declared part of his tribal land a protected area. This land had been been badly degraded during the war of liberation in what was formerly Rhodesia, so that by the late 1980s much of the land was only marginally economic to farm. Mr Nembire also promoted sustainable agricultural practices aimed at conserving the easily eroded land. Since his project began, crop yields have increased and the indigenous woodland on the protected area has begun to regenerate.

PUBLICATIONS

VITAL SIGNS 1992–1993: the trends that are shaping our future
Lester R. Brown, Christopher Flavin and Hal Kane,
Worldwatch Institute/Earthscan, London, 1992.

As the authors of this book point out, the world's news media regularly contain information about the prices of consumer goods and news of the trends that will affect people's immediate income. The range of data is extensive: the price of oil; the numbers of unemployed; inflation; changes in the Gross National Product; the number of new houses built and cars sold; and the price of tea, sugar, coffee and pork bellies. Consumers, growers, workers, bureaucrats and business executives all get to learn about the trends that affect them. But what about the health of the planet?

There is no shortage of data about the planet, but none of it is of any use if nobody knows about it. The authors of Vital Signs have not magically invented new data but, using existing data, they have methodically sieved many of the vast repositories of environmental information to give the reader indicators of the planet's environmental health, its 'vital signs'. And there are lots of them. You can see what has happened to per capita food production during the past 40 years, be it grain, soya beans, meat or fish; and the authors succinctly give trends of the area under agriculture and of energy use. You can read about recent oil production and consumption, and likely future trends. Other topics covered include the atmosphere, economics—developing country debt, and car and bicycle production—and social and military trends.

Part Two of the book is devoted to special topics, ranging from the loss of forests and bird species, and soil erosion to steel recycling, nuclear waste accumulation, maternal mortality and coerced motherhood.

The same two-page format is used throughout most of the book, with one page of text and one page comprising a table and two graphs. In this age of computer jargon, eco-jargon and 'jargon jargon', it is a relief to find a book that is so 'reader friendly'. Oops!

THE STATE OF WORLD RURAL POVERTY:
an inquiry into its causes and its consequences
Idriss Jazairy, Mohiuddin Alamgir and Theresa Panuccio,
published for The International Fund for Agricultural Development
(IFAD) by New York University Press, 1992.

More than one billion of the developing world's rural dwellers live below the poverty line. That works out at 36 percent of the total rural population in the 114 developing countries referred to in this book.

Although the book contains an extensive range of data about poverty and rural populations, it is unavowedly arguing a case rather than simply describing the plight of the rural poor. 'The thesis of this study is that growth can be neither maximized nor sustained if it does not draw on the productive contribution of all segments of the population.'

The authors argue that handouts are counter-productive, and that for the rural poor to pull themselves out of their poverty, they must have access to the resources needed to sustain themselves, and be encouraged by policies that reward their efforts. This means, among other things, security of land tenure and prices for agricultural produce to encourage smallholders. Much evidence is produced to show that smallholders are highly efficient contributors to the economies of developing countries. But, reflecting the growing awareness of environmental constraints on growth they say, 'A growth process which runs ahead of the natural rate of resource regeneration, or depletes non-renewable resources, will soon decelerate growth itself and reduce the capacity of the countries involved to increase the productivity of the rural poor.'

This book is more turgid reading than Vital Signs reviewed above, but contains a wealth of data, mixed with analysis and anecdotes to exemplify the book's central thesis.